

EPSON®

Programming Guide

For
6 Color

EPSON Stylus Pro 7000

(PM-7000C)

(Level I)

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This Programming Guide is intended for use in conjunction with the EPSON Standard ESC/P Reference Manual (December 1997)

CHAPTER 1: INTRODUCTION

This section of the Programming Guide will provide a technical overview of another EPSON's 6-color large format inkjet printer to facilitate driver development.

1.1 EPSON Stylus Pro 7000

The Stylus Pro 7000 is the follow-up to the six-color large format inkjet printer Stylus Pro 9000 introduced by EPSON. The Stylus Pro 7000, a large format printer that is targeted at vertical, rather than the traditional wide horizontal markets that EPSON traditionally markets to. The printer can be used in Image Composition, Print-for-Pay, Service Bureaus, Fine Arts/Pro Photography, Exhibit builder, and more. The printer is going to be sold worldwide as the Stylus Pro 7000 except in Japan, where it is called PM-7000C. The printer first was launched in Japan in December of 1999. Then it was launched in Europe, Asia and the Americas during first/second quarter of 2000.

The Stylus Pro 7000 is 24" wide, 1440x720 dpi. It has the same head as Stylus Pro 9000- 320 Nozzles: 64 black and 64 for each color (CMYLCm).

The EPSON Stylus Pro 7000 printer incorporates the following features:

- Six individual ink color with Ink quantity detection for each cartridge (100ml)
- Built in High Quality MicroWeave for square and non-square resolutions
- Thick media capability up to 1.5 mm
- 24" paper width (A1)
- 25-Meter (82 feet) maximum page length
- Built-in 8-bit bidirectional parallel interface (IEEE-1284)
- Built-in USB Interface
- Type B Optional Ethernet I/F card 10Base/100Base
- High Quality with 1440(H) x 720(V), microdot printing
- Wide range of paper types

This document doesn't contain information for an individual ISV's specific driver development, but does contain the new commands associated with the Stylus Pro 7000's ability to reproduce subtle tone variations.

See Table 1 for a quick feature of EPSON Stylus Pro 7000, the first large format printer.

Table 1: The EPSON Stylus Pro 7000 Printer Feature Summary

	EPSON Stylus Pro 7000		
Print Head	64 black nozzles, 320 color nozzles, 64 nozzles x 3 (CMYKLcLm). Same head as Stylus Pro 5000.		
Interface (s)	Parallel, USB and Optional Ethernet		
Printer Language	ESC/P Raster & Remote Mode		
Resolution Max (dpi)	1440(h) x 720(v)		
Selectable dot size	Yes		
Ink Type	**CMYKLcLm		
Paper type vs. Resolution			
Matte Paper (Roll)	****360, 720		
Photo Quality Glossy Paper (Roll)	****360, 720, 1440***		
Photo Quality Semi Glossy Paper (Roll)	****360, 720, ***1440		
Photo Quality Ink jet Paper (Sheet)	720, 1440***		
Photo Quality Glossy Paper (Sheet)	720, 1440***		
Photo Quality Glossy Film (Sheet)	720, 1440***		
EPSON Art Board (Sheet) (TBD)			

* - This printing mode is achieved by the printer driver only.

** - CMYKLcLm refers to: Cyan, Magenta, Yellow, Black, Light Cyan and Light Magenta

*** - 1440 (h) x720(v)

**** - 720 (h) x360(v)

Table 2: Stylus Pro 7000 Throughput

Throughput	A1 Print Time	Resolution	Print Mode
	5 Min.	360dpi x 360dpi	Bi-D printing Microweave mode 200cps
	8 Min	720dpi x 360dpi	Bi-D printing Full overlap mode 300cps
	15 Min	720dpi x 720dpi	Bi-D printing Full overlap mode 300cps
	28 Min	1440dpi x 720dpi	Bi-D printing 4 pass 300cps

CHAPTER 2: PAPER TYPES AND SIZES

2.1 EPSON Paper Types and Sizes for the Stylus Pro 7000

In addition to the standard plain paper, EPSON provides special paper type in the following sizes:

Table 3: EPSON Paper Types and Sizes for Stylus Pro 7000

Paper Type/ Subset	Stylus Pro 7000		Paper Size in “inch”	Paper Size in “mm”	Product Code Number (U.S.)
<i>Plain Paper (Cut sheet)</i>					
Letter	√		8.5x11	216x279	
US B	√		11x17		
US C	√		17x22		
US D	√		22x34		
A4	√		8.3x11.7	210x297	
A3	√			297x420	
A3+/Super A3/B	√			329x483	
A2	√			420x594	
A1+	√		24x36		
A1	√			594x841	
B5	√		7.2x10.1	182x257	
B4	√			257x364	
B3	√			364x515	
B2	√			515x728	
Roll Paper (Thickness: 0.1)	√				
User-defined	√			182-610 x 182-2300 (mm)	*Refer to Chapter 3: Printable Areas.
<i>EPSON Presentation Matte Paper (Roll) (Thickness: 0.2 mm)</i>					
Presentation Matte Paper	√		24”x82’	604mm(24”) x 25m	

Table 3: EPSON Paper Types and Sizes for Stylus Pro 7000 - Cont'd

Paper Type/ Subset	Stylus Pro 7000		Paper Size in "inch"	Paper Size in "mm"	Product Code Number (U.S.)
*EPSON SEMI GLOSS PAPER – HEAVY WEIGHT (Roll) (Thickness: 0.2mm)					
SEMI GLOSS PAPER - HEAVY WEIGHT	√		24"x82"	604mm x 25m	
*EPSON GLOSSY PAPER – HEAVY WEIGHT (Roll) (Thickness: 0.2mm)					
GLOSSY PAPER	√		24"x67.9"	604mm x 20.7m	
GLOSSY PAPER	√		12.95"x32.81"	329mm x 10m	
GLOSSY PAPER	√		8.27"x32.81"	210mm x 10m	
EPSON Poster Board -Semigloss (Cut Sheet) (Thickness: 1.2mm)					
Poster Board**- Semigloss (B2)	√		20.25"x28.7"	515x728	S041237
EPSON Photo Glossy Paper (U.S. only)					
Photo Glossy Paper					
EPSON Backlight Film (Roll - U.S. only)					
Backlight Film					
Photo Quality Inkjet Paper (Cut Sheet)					
A3	√			297x420	
A3+/Super A3/B	√			329x483	
A2 (Thickness: 0.1mm)	√			420x594	
USC	√		17x22		S041171
A4	√			210x297	
USB	√		11x17		
Letter	√		8.5x11		
Photo Quality Glossy Film (Cut Sheet)					
A3	√			297x420	
A3+/Super A3/B (Thickness: 0.1)	√			329x483	
A4	√			210x297	
USB	√		11x17		
Photo Paper (Cut Sheet)					
A3	√			297x420	S041142
A3+/Super A3/B (Thickness: 0.2)	√			329x483	S041143
A4	√			210x297	

* These names are for U.S. market only. The Worldwide names for these media “Semigloss Photo Paper- Heavy Weight (Roll)” and “Glossy Photo Paper- Heavy Weight (Roll)” respectively.

**The surface of Poster Board – Semigloss is same as Semi Gloss Paper-Heavy Weight. Therefore, with the Poster Board media the “Semi Gloss Paper- Heavy Weight” print mode is used.

Note:

For Roll Paper - The left, right, top and bottom margins of the Stylus Pro 7000 is 3mm, (42 dots).

For Cut Sheet – The top, left, and right margin of the Stylus Pro 7000 is 3mm (42 dots). Except, the bottom margins is 14 mm (198 dots).

Cut Sheet – The Minimum User defined paper sizes for the *EPSON Stylus Pro 7000* is 7.2” (W) x 7.2” (H) (182mm x 182mm) and the Maximum User defined is 24” (W) x 7.5’ (H) (610mmx2300mm)

The maximum printing width is 604mm, 8562 dot. (=24” – 3 mm –3 mm)

The Minimum and Maximum Printing Width for the Roll Paper is 182mm~610mm.

The Maximum Printing Height for the Roll Paper is 25m.

The Minimum and Maximum Printing Width for the Cut Sheet paper is 182mm~610mm.

The Minimum and Maximum Printing Height for the Cut Sheet paper is 182mm~2300mm.

The Default for both the roll paper and the cut sheet for U.S. is letter and for others including the Europe is A4.

The paper types supported with each size depend on the market.

2.2 Paper Type subject to Path & Page Delay, Cutter Auto OFF

Paper Type	Path Delay ms	Page Delay S	Auto Cutter OFF
Plain Paper	0	0	-
Presentation Matte Paper	0	0	-
Glossy Paper-Heavy Weight	0	0	-
Semi Gloss Paper-Heavy Weight	0	0	-
Photo Quality Ink Jet Paper	0	0	-
Photo Paper	0	0	-
Photo Quality Glossy Film	0	0	-
Poster Board -Semigloss	0	0	OFF

Note:

If Cut Sheet is selected, Auto Cutter ON can't be selected.

2.3 Paper Weight

EPSON INK JET MEDIA SPECIFICATION TABLE

Media Product Name	Basis Weight		Thickness	ISO Brightness	Opacity
	(g/m2)	(lbs./ream)	(mils)	(ISO %)	(%)
Photo Glossy Paper	150	40	5.5	95	
Backlight Film	155	41	5		
DuPont Commercial Proofing Paper	195	52		90	95
DuPont Commercial Matte Proofing Paper	205	55	9.3	-	80
DuPont Publication Proofing Paper	205	55	9.3	-	80
Glossy Paper - Heavy Weight	190	51	9.1	89	96
Semi Gloss Paper - Heavy Weight	180	48	8.4	85	95
Presentation Matte Paper	172	46	7.9		90
Glossy Film Roll (TBD)					
Poster Board – Semigloss	870	231	1.2mm	88	100

2.4 Characteristic Information for Each Paper Type

Mechanism sequence setting, cutter On/Off information, drying time, and paper thickness are following as characteristic information (TBD)

Table 4: Characteristic Information for Each Paper Type – ROLL Paper

Paper type	1.1.1. Set mechanism sequence	1.1.3. Set auto cut	1.1.5. Set drying time	1.1.9. Set paper thickness
	SN 03H 00H 00H 01H <m2>	AC 02H 00H 00h <m1>	DR 04H 00H 00H 00H <m2> <m3>	PH 02H 00H 00H <m1>
Plain Paper	00H (Default)	00H(Cutter Off) or 01H(Cutter On or 02H(Print vertical line)	0000H (No drying time)	01H (0.1mm)
Matte Paper	00H (Default)	00H(Cutter Off) or 01H(Cutter On or 02H(Print vertical line)	0000H (No drying time)	02H (0.2mm)
Photo Quality Glossy Paper	00H (Default)	00H(Cutter Off) or 01H(Cutter On or 02H(Print vertical line)	0000H (No drying time)	02H (0.2mm)
Photo Quality Semi Glossy Paper	00H (Default)	00H(Cutter Off) or 01H(Cutter On or 02H(Print vertical line)	0000H (No drying time)	02H (0.2mm)
Glossy Film	00H (Default)	00H(Cutter Off) or 01H(Cutter On or 02H(Print vertical line)	0000H (No drying time)	01H (0.1mm)

Table 5: Characteristic Information for Each Paper Type – Cut sheet

Paper type	1.1.1. Set mechanism sequence	1.1.3. Set auto cut	1.1.5. Set drying time	1.1.9. Set paper thickness
	SN 03H 00H 00H 02H <m2>	AC 02H 00H 00h <m1>	DR 04H 00H 00H 00H <m2> <m3>	PH 02H 00H 00H <m1>
Plain Paper	00H (Default)	00H(Cutter Off) *n/a for U	0000H (No drying time)	01H (0.1mm)
Matte Paper	00H (Default)	00H(Cutter Off) *n/a for U	0000H (No drying time)	02H (0.2mm)
Photo Quality Glossy Paper	00H (Default)	00H(Cutter Off) *n/a for U	0000H (No drying time)	02H (0.2mm)
Photo Quality Semi Glossy Paper	00H (Default)	00H(Cutter Off) *n/a for U	0000H (No drying time)	02H (0.2mm)
Photo Quality Glossy Film	00H (Default)	00H(Cutter Off) *n/a for U	0000H (No drying time)	01H (0.1mm)
Photo Quality Ink Jet Paper	01H (big PG)	00H(Cutter Off) *n/a for U	0000H (No drying time)	01H (0.1mm)

CHAPTER 3: PRINTABLE AREAS

3.1 Printable Area – Stylus Pro 7000 Roll Paper

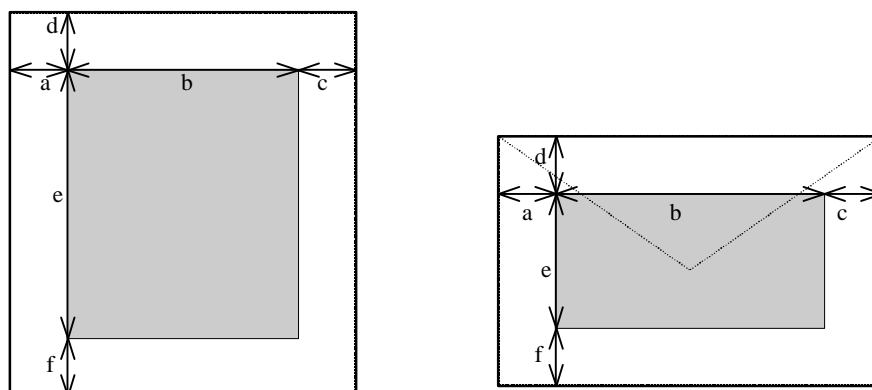


Table 6: Printable Area for the EPSON Stylus Pro 7000 – Roll Paper

Paper type	a	b	c	d	e	f
<i>“Units are in dots where 1 dot = 1/360”</i>	Left Margin	Printable Width	Right Margin	Top Margin	Printable Height	Bottom Margin/
Letter	42	2976	42	42	3876	42
US B	42	3876	42	42	6036	42
US C	42	6036	42	42	7836	42
US D	42	7836	42	42	12156	42
A4	42	2892	42	42	4125	42
A3	42	4125	42	42	5869	42
Super A3/B	42	4579	42	42	6762	42
A2	42	5869	42	42	8335	42
A1	42	8335	42	42	11836	42
B5	42	2496	42	42	3559	42
B4	42	3559	42	42	5075	42
B3	42	5075	42	42	7215	42
B2	42	7215	42	42	10234	42
User Defined	42	Min. 2496- Max. 8562	42	42	Min. 2496- Max. 32514	42

3.2 Printable Area – Stylus Pro 7000 Cut Sheet Paper

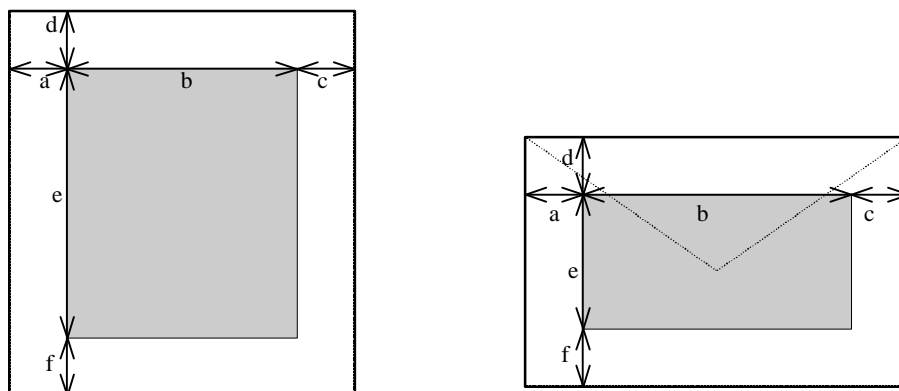


Table 7: Printable Area for the EPSON Stylus Pro 7000 – Cut Sheet

Paper type	a	b	c	d	e	f
<i>“Units are in dots where 1 dot = 1/360”</i>	Left Margin	Printable Width	Right Margin	Top Margin	Printable Height	Bottom Margin/
Letter	42	2976	42	42	3720	198
US B	42	3876	42	42	5880	198
US C	42	6036	42	42	7680	198
US D	42	7836	42	42	12000	198
A4	42	2892	42	42	3969	198
A3	42	4125	42	42	5713	198
Super A3/B	42	4579	42	42	6606	198
A2	42	5869	42	42	8179	198
A1	42	8335	42	42	11680	198
B5	42	2496	42	42	3403	198
B4	42	3559	42	42	4919	198
B3	42	5075	42	42	7059	198
B2	42	7215	42	42	10078	198
User Defined	42	Min. 2496- Max. 8562	42	42	Min. 2340- Max. 32358	198

Notes:

Left and top Margins: 42 dots (3mm) for both roll paper and cut sheet.
Bottom Margin; 42 dots for roll paper, 198 dots (14mm) for cut sheet.
(Unit: 360 dpi)

The maximum printing width is 604mm. (= 24 inch - 3 mm- 3 mm)

The Minimum and Maximum Printing Width for the Roll Paper is 176mm~604mm.

The Maximum Printing Height for the Roll Paper is 25m.

The Minimum and Maximum Printing Width for the Cut Sheet paper is 176mm~604mm.

The Minimum and Maximum Printing Height for the Cut Sheet paper is 165mm~2283mm.

CHAPTER 4: Printing Mode

4.1 Printing Mode – Stylus Pro 7000

Following table shows ink duty and printing mode for each Media type, Resolution, MicroWeave, Dot Control and Bi-directional (High Speed) for the EPSON Stylus Pro 7000. These printing modes use the printer MicroWeave. If you do not use the printer MicroWeave, then the command parameters are different.

Table 8: Printing mode for the EPSON Stylus Pro 7000

Media type	Input Resolution HxV(dpi)	Bi-D	Resolution Setting	M/W Setting
		ESC U	ESC (D	ESC (i
Plain Paper	360x360	on/off	360x360	None
	360x360	on/off	360x360	FOL
Presentation Matte Paper	720x720	on/off	720x720	FOL
	720x360	on/off	720x360	FOL
Glossy Paper- Heavy Weight	1440x720	on/off	1440x720	4pass
	720x720	on/off	720x720	FOL
	720x360	on/off	720x360	FOL2
Semi Gloss Paper- Heavy Weight	1440x720	on/off	1440x720	4pass
	720x720	on/off	720x720	FOL
	720x360	on/off	720x360	FOL2
Photo Quality Ink Jet Paper	1440x720	off	1440x720	4pass
	720x720	off	720x720	FOL
Photo Quality Glossy Film	1440x720	on/off	1440x720	4pass
	720x720	on/off	720x720	FOL
Poster Board - Semigloss	1440x720	on/off	1440x720	4pass
	720x720	on/off	720x720	FOL
	720x360	on/off	720x360	FOL

Refer to Table 9 for the recommended printer driver settings for the Stylus Pro 7000 media.

Table 9: Recommended Printer Driver Settings for the EPSON Stylus Pro 7000 Media

Media Type	Printer Driver Mode
Plain Paper	Plain Paper
Presentation Matte Paper	Presentation Matte Paper
*GLOSSY PAPER-HEAVY WEIGHT	Photo Paper
*SEMI GLOSS PAPER- HEAVY WEIGHT	Semi Gloss Photo Paper
Poster Board-Semigloss	Semigloss Photo Paper
Glossy Film Roll	Glossy Film
Photo Glossy Paper	Photo Quality Glossy Film
Backlight Film	Photo Quality Glossy Film

These names are for U.S. market only. The Worldwide names for these media the “Semigloss Photo Paper- Heavy Weight (Roll)” and the “Glossy Photo Paper- Heavy Weight (Roll)” respectively.

4.2 Printing MicroWeave

The printer MicroWeave modes are controlled by Resolution setting command, MW setting command, and Dot control command as follows.

Table 10: Printer MicroWeave Mode

Input Resolution HxV (dpi)	Output Resolution HxV (dpi)	Pass	Resolution Setting	MW Setting	Dot Control
			ESC (D	ESC (i	ESC (e
360x360	360x360	1	360x360	MW	Normal 2dot
		1	360x360	None	Normal 2dot
360x360	720x360	2	360x360	FOL	Normal 2dot
	720x720	2	360x360	FOL2	Normal 2dot
720x360	720x360	1	720x360	MW	Normal 1dot
		2	720x360	FOL	Normal 1dot
	720x720	2	720x360	FOL2	Normal 1dot
720x720	720x720	1	720x720	MW	Normal 1dot
		2	720x720	FOL	Normal 1dot
		2	720x720	FOL	Micro
		4	720x720	4pass	Micro
1440x720	1440x720	2	1440x720	FOL	Micro
		4	1440x720	4pass	Micro

Input Resolution: Data resolution to input to printer

Output Resolution: Print resolution

CHAPTER 5: COMMAND SEQUENCE FLOW

5.1 Raster Graphics Mode

The Raster graphics command controls the following two modes.

- 1) Non-compressed mode Print data are transferred without compression. This is effective especially for photographs and other data, which yield only a low compression ratio.
- 2) RLL compression mode Print data are compressed using RLL (run-length limited) compression. This is effective for data with repeated patterns, such as graphics and illustrations.

5.2 Command Transfer Sequence

The basic commands and command sequence for use with non-compressed mode and RLL compression mode are shown below.

Command setting procedure for Non compression mode and Run-length compression mode

Table 11: Command sequence flow

Forward cycle		Setting	Items	Command
Document Unit		1.Initial Setting	1.1 Set remote mode	ESC (R
			1.1.1 Set Mechanisim Seq.	SN
			1.1.2 Set paper path	PP
			1.1.3 Set auto cutting state	AC m1=00H, 01H, or 02H
			1.1.4 Set no paper feed eject	AC m1=40H or 41H
			1.1.5 Set drying time	DR
			1.1.6 Select ink type	IK
			1.1.7 Set vertical print page line mode	EX 06H 00H 00H 00H 00H 14H m1
			1.1.8 Select paper thickness	PH
			1.2 Terminate remote mode	ESC 00H
			1.3 Initialize	ESC @
			1.4 Set graphic mode	ESC (G
			1.5 Set units	ESC (U
		2.Print Control	2.1 Print direction control	ESC U
			2.2 Set micro weaving	ESC (i
			2.3 Dot control	ESC (e
		3.Set Print Format	3.1 Set page format	ESC (c
			3.2 Set paper size	ESC (S
		4.Set Raster Format	4.1 Set raster resolution	ESC (D
Page Unit	Raster Unit	5.Set Vertical Position	5.1 Set vertical position	ESC (v or ESC (V
		6.Data Output	6.1 Set horizontal position	ESC (/ or ESC (\$
			6.2 Graphics data Repeat above for each color	ESC i
		7.New Page	7.1 New page	FF
		8.Print End	8.1 Graphics mode end	ESC @
			8.2 Load default value	ESC (R LD ESC 00H

The commands in the above table are basically identical for both modes. The difference between 2 modes are command parameter and data format.

Note, items in bold are either new or not included in the ESC/P Reference manual. See individual command sections of this Programming Guide for the information.

“ESC (R” is an ESC/P2 command to enter the EPSON REMOTE Mode. While in this mode, no ESC/P or ESP/P 2 commands will be recognized by the printer until the “ESC 00H” command is invoked to exit Remote Mode. See the Remote mode section for more information.

ESC (/ , ESC(\$ (Set horizontal position command) is recommended to shift to left margin.
(To standardize specification: Command to shift left margin has no CR command.)

Cautions to set command

- The blank of vertical direction should be shifted by Set vertical position command. (Avoid filling blank with NULL image.)
- Use printer micro weaving
Number of vertical direction dots of data is 1 when data is transmitted with Select raster data command ESC i.

ESC i command, mL=1, mH=0 x 6 colors
ESC (V, ESC (v command

Refer to *Chapter 7* for specifications of using commands.

5.3 Print cancel sequence –

This is when user cancels printing job.

Page Unit	Raster Unit	5.Set Vertical Position	5.1 Set vertical position	ESC (v or ESC (V
		6.Data Output	6.1 Set horizontal position	ESC (/ or ESC (\$
			6.2 Graphics data Repeat above for each color	ESC i
		7.Print Cancel	7.1 Graphics mode end	ESC @
			7.2 Blank skip eject mode set	ESC (R AC 02H 00H 00H 41H ESC 00H
			7.3 New page	FF
			7.4 Load default value	ESC (R LD ESC 00H

The commands in the above table are basically identical for both non-compression mode and run-length compression mode. The only differences between the 2 modes are command parameter and data format.

CHAPTER 6: INDIVIDUAL COMMAND SPECIFICATION

6.1 Initialize Printer “ESC @”

Format:

ASCII	ESC	@
Hex	1B	40
Decimal	27	64

Function:

- The various settings are returned to their initial values.
- The function of the CAN command is executed.
- The page management coordinate system and the position management coordinate system are set by taking the origin upon the Y-axis as the present printing position on the Y-axis.
- The present printing position on the X-axis is set to the origin upon the X-axis.
- The text mode is selected.

Related Commands:

Commands related in the direction of applying an effect (Setting)

The settings for all commands are returned to their initial states.

Commands related in the direction of receiving an effect (Setting)

None

Commands related in the direction of applying an effect (Operation)

None

Commands related in the direction of receiving an effect (Operation)

None

6.2 Select Graphics Mode “ESC (G nL nH m”

Format:

ASCII	ESC	(	G	nL	nH	m
Hex	1B	28	47	nL	nH	m
Decimal	27	40	71	nL	nH	m

Range of Definition:

nL=01H, nH=00H

m=01H or 31H

Function:

- Shifts to graphics mode.
- If m has any value other than the above, this command is ignored.
- Printing of lines up to the present line is started, and the printer waits until the printing is completed.
- The various settings are the same as when the power is turned on.
- The page management coordinate system and the position management coordinate system are set by taking the printing position in the Y direction at the time of setting as the origin upon the Y-axis.
- The printing position in the X direction is set to the origin upon the X-axis.
- The MicroWeave print mode selection command is effective.

Initial State:

The character mode.

Related Commands:

Commands related in the direction of applying an effect (Setting)

The character mode selection made by the ESC @ command is changed.

Commands related in the direction of receiving an effect (Setting)

The graphics mode is canceled by the ESC @ command.

Commands related in the direction of applying an effect (Operation)

Only the following commands are valid for Stylus Pro 7000 in Graphics mode:

LF	ESC (C	FF	CR
ESC (U	ESC (V	ESC.	ESC (r
ESC +	ESC (v	ESC @	ESC H
ESC (c	ESC \$	ESC (i	ESC r
ESC (S	ESC U	ESC (e	ESC (/
ESC	ESC G		

Commands related in the direction of receiving an effect (Operation)

None

6.3 Set Unit “ESC (U nL nH p v h mL mH”

Format:

ASCII	ESC	(	U	nL	nH	p	v	h	mL	mH
Hex	1B	28	55	nL	nH	p	v	h	mL	mH
Decimal	27	40	85	nL	nH	p	v	h	mL	mH

Range of Definition:

nL=05H, nH=00H
p=01H, 02H, 04H, 08H
v=01H, 02H, 04H, 08H
h=01H, 02H, 04H, 08H
mL=A0H, mH=05H

Function:

- Set the following standard units in units of P/(mH*256+mL) inch.
Page units ESC (c, ESC (C, ESC (S, etc.
- Set the following standard units in units of V/(mH*256+mL) inch.
Vertical position units ESC (v, ESC (V, etc.
- Set the following standard units in units of H/(mH*256+mL) inch
Horizontal position units ESC (\$, ESC (/ , ESC \$, ESC \ , etc.
- mL, mH are elective, but 1440 dpi is recommended.
- This command is effective only at the time of the graphics mode.

Initial State:

- Page management units: 1/360 inch
- Relative horizontal position setting units: 1/180 inch units
- Absolute horizontal position setting units: 1/60 inch units
- Relative vertical position setting units: 1/360 inch units
- Absolute vertical position setting units: 1/360 inch units

Related Commands:

Commands related in the direction of applying an effect (Setting)

None

Commands related in the direction of receiving an effect (Setting)

None

Commands related in the direction of applying an effect (Operation)

The units for the relative horizontal position setting by the ESC\ command is set.
The units for the absolute horizontal position setting by the ESC \$ command is set.
The units for the relative horizontal position setting by the ESC (/ command is set.
The units for the absolute horizontal position setting by the ESC (\$ command is set.

The units for the relative vertical position setting by the ESC (v command is set.

The units for the relative vertical position setting by the ESC (V command is set.

The units for the “unit” unit page length specification by the ESC (C command is set.

The units for the page format specification by the ESC (c command is set.

The units for the paper dimension specification by the ESC (S command is set.

Commands related in the direction of an effect (Operation)

The initial state is returned to by the ESC @ command.

6.4 Turn Unidirectional Mode On/Off “ESC U n”

Format:

ASCII	ESC	U	n
Hex	1B	55	n
Decimal	27	85	n

Range of Definition:

n=00H, 01H, 02H, 30H, 31H, 32H

Function:

- The printing direction is selected according to the value of n in the following manner:
 - n=00H or 30H: selects Bi-directional printing
 - n=01H or 31H: selects Unidirectional printing
 - n=02H or 32H: selects automatic printing direction control
- If n has any value other than the above, this command is ignored.

Initial State:

Bi-directional printing

Related Commands:

Commands related in the direction of applying an effect (Setting)

Initialization by the ESC @ command is overridden.

Commands related in the direction of receiving an effect (Setting)

It is reset to the initial state by the ESC @ command.

Commands related in the direction of applying an effect (Operation)

None

Commands related in the direction of receiving an effect (Operation)

None

6.5 Select MicroWeave Print Mode “ESC (i”

Format:

ASCII	ESC	(	i	none	none	n
Hex	1B	28	69	01	00	n
Decimal	27	40	105	1	0	n

Range of Definition:

n = 00H, 01H, 30H, 31H, 02H, 32H, 03H, 33H, 04H, 34H

Function:

- Select /deselect the MicroWeave mode:
 - n=0, 30H: Deselect
 - n=1, 31H: Select simple Micro Weaving
 - n=2, 32H: Select Full-overlap(FOL)
 - n=3, 33H: Select 4pass
 - n=4, 34H: Select FOL2
- The following is combination of settings for Stylus Pro 7000:

Density (v x h)	None	M/W	FOL	4Pass	FOL2	Invalid
180 x 180	o	-	-	-	-	None
180 x 360	o	-	-	-	-	None
180 x 720	o	-	-	-	-	None
360 x 360	-	o	o	-	o	M/W
360 x 720	-	o	o	o	o	M/W
720 x 720	-	o	o	o	-	M/W
720 x 1440	-	-	o	o	-	FOL

o Effective

- Invalid

If invalid combination is set, the setting is invalid.

Initial State:

Non-MicroWeave mode

Related Commands:

Commands related in the direction of applying an effect (Setting)

The deselect status by the ESC (G command is changed.

The deselect status by the ESC @ command is changed.

Commands related in the direction of receiving an effect (Setting)

The deselect status is set by the ESC (G command.

The deselect status is set by the ESC @ command.

Command related in the direction of applying an effect (Operation)

None

Commands related in the direction of receiving an effect (Operation)

None

6.6 Select Dot Size “ESC (e nL nH m d”

Format:

ASCII	ESC	(	e	nL	nH	m	d
Hex	1B	28	65	02	00	m	d
Decimal	27	40	101	02	00	m	d

Range of Definition:

nL = 02H, nH = 00H
m = 00H, d = 00H, 01H, 02H, 03H, 04H

Function:

- The value of d specifies the Dot Size.

d	Dot Size
00H:	Default*
01H: dot size 1	Micro dot
02H: dot size 2	Normal dot (Single)
03H: dot size 3	Normal x 2 (Double)

* Dot selection Normal (Single or Double) is performed automatically depending upon the chosen resolution.

- Dot control is effective regardless of the printing mode and printing density.
- If the dot size is changed in the middle of the page, the operation is not guaranteed.
- m is the parameter to extend functions, it is fixed with 0.
- If n has a value not specified above, this command is ignored.

Initial State: Default

Related Commands:

Commands related in the direction of applying an effect (Setting)

None

Commands related in the direction of receiving an effect (Setting)

The default is specified by the ESC @ command.

The default is specified by the ESC (G command.

Commands related in the direction of applying an effect (Operation)

None

Commands related in the direction of receiving an effect (Operation)

None

6.7 Set Page Format “ESC (c nL nH t1 t2 t3 t4 b1 b2 b3 b4”

Format:

ASCII	ESC	(	c	nL	nH	t1..... t4	b1..... b4
Hex	1B	28	63	nL	nH	t1..... t4	b1..... b4
Decimal	27	40	99	nL	nH	t1..... t4	b1..... b4

Range of Definition:

nL=08H, nH=00H

$0 \leq t1, t2, t3, t4, b1, b2, b3, b4 \leq 255$

$(t4 \times 256 \times 256 \times 256 + t3 \times 256 \times 256 + t2 \times 256 + t1) < (b4 \times 246 \times 256 \times 256 + b3 \times 256 \times 256 + b2 \times 256 + b1) \leq 1\text{FFFFFFFH}/1440 \text{ inch}$

Function:

- Taking as its origin, on the Y-axis sets the position management coordinate system, a position spaced in the positive direction by $(t4 \times 256 \times 256 \times 256 + t3 \times 256 \times 256 + t2 \times 256 + t1) \times (\text{page management units})$ inches from the origin on the Y-axis of the page management coordinate system. Further, the bottom margin is set at a position spaced in the positive direction by $(b4 \times 256 \times 256 \times 256 + b3 \times 256 \times 256 + b2 \times 256 + b1) \times (\text{page management units})$ inches from the origin on the Y-axis of the position management coordinate system.
- The printing position in the Y direction is shifted to the origin of the position management coordinate system. At this time, the origin on the X axis is not changed.
- If the distance from the origin on the Y axis of the position management coordinate system to the bottom margin position is greater than the page length, then this distance from the origin on the Y axis to the bottom margin position is set as new page length.
- If the paper that is inserted is cut sheet paper, then the distance from the top margin position to the bottom margin position is set as the page length.
- This command is effective only in the graphics mode.
- If this command was received right after paper is fed, it is shifted to the top margin position setting.

Initial State:

- The top margin position is set to 0 inches.
- The bottom margin position is set to the page length.
- The page length of the Roll Paper is set to 11 inches.
- The page length of the Cut Sheet Paper is set to 44 inches.

Related Commands:

- Commands related in the direction of applying an effect (Setting)
The set page length is changed by the ESC (C commands).
- Commands related in the direction of receiving an affect (Setting)
The top margin and the bottom margin are set by the ESC (C command).
The page length and the bottom margin position are returned to their initial states by the ESC @ and the ESC (G commands).
- Commands related in the direction of applying an effect (Operation)
New page processing by the FF command is affected (the amount of movement is changed).
New lines generated by the LF command that goes outside of the printable area is affected.
Processing by the ESC (v command is affected.
Processing by the ESC (V command is affected.
- Commands related in the direction of receiving an effect (Operation)
The page management units are set by the ESC (U command.

6.8 Set Paper Size “ESC (S nL nH w1 w2 w3 w4 l1 l2 l3 l4”

Format:

ASCII	ESC	(	S	nL	nH	w1..	w4	l1	l2	l3	l4
Hex	1B	28	53	nL	nH	w1..	w4	l1	l2	l3	l4
Dec.	27	40	83	nL	nH	w1..	w4	l1	l2	l3	l4

Range of Definition:

nL=08H, nH=00H

Function:

- Set (w4x256x256x256+w3x256x256+w2x256+w1) x (Page Control Units) inches as the X direction paper width (actual width from the left to the right).
Set (l4x256x256x256+l3x256x256+l2x256+l1) x (Page Control Units) inches as the Y direction paper length (actual length from the top to the bottom).
- The top margin and the bottom margin do not affect the page length.
- If the paper size is 0, it will be ignored as not specified.
- If it is set right after , or when paper is out, from the top of paper to the bottom of paper is considered to be the paper length.
- If it is set not just after paper feeding, and when paper is in, from the setting position to the bottom of paper is considered to be the paper length.
- This command can be used only during graphics mode, ESC (G.

Initial State:

-

Related Commands:

- Commands related in the direction of applying an effect (Setting)
None
- Commands related in the direction of receiving an effect (Setting)
The page control setting unit is set by the ESC (U command.
- Commands related in the direction of applying an effect (Operation)
None
- Commands related in the direction of receiving an effect (Operation)
It reset to initial states by ESC @ and ESC (G commands.

6.9 Set Resolution of Raster image “ESC (D nL nH rL rH v h”

Format:

ASCII	ESC	(	D	nL	nH	rL	rH	v	h
HEX	1B	28	44	nL	nH	rL	rH	v	h
Decimal	27	40	68	nL	nH	rL	rH	v	h

Range of Definition:

nL=04H, nH=00H

0 < v ≤ 127

0 < h ≤ 127

Function:

- Set resolution of raster image at (rHx256+rL)DPI.
- Set raster vertical direction resolution at v/(rH x 256 + rL) DPI
- Set raster horizontal direction resolution at h/(rH x 256 + rL) DPI
- This command is effective only for the graphic mode.
- The following tables are the combination of print density, command, and parameter for Stylus Pro 7000.

- MicroWeave Function **OFF**

Print density (V x H)	Parameters		Note
	v / r	h / r	
180x180	1/180	1/180	

- Micro Weave Function **ON**

Print density (V x H)	Parameters		Note
	v / r	h / r	
360x360	1/360	1/360	
360x720	1/360	1/720	
720x720	1/720	1/720	
720x1440	1/720	1/1440	

Initial State: The resolution for both Raster vertical direction and raster horizontal direction is 360 dpi.

Related Command:

Commands related in the direction of applying an effect (Setting)

Effect to be processed by ESC i command.

Command related in the direction of receiving an effect (Setting)

The Resolution setting of Raster image is returned to this initial states by the ESC
@ and the ESC (G commands.

Command related in the direction of applying an effect (Operation)

None

Command related in the direction of receiving an effect (Operation)

None

6.10 Set Absolute Vertical Print Position “ESC (V nL nH m1 m2 m3 m4 ”

Format:

ASCII	ESC	(	V	nL	nH	m1	m2	m3	m4
HEX	1B	28	56	nL	nH	m1	m2	m3	m4
Decimal	27	40	86	nL	nH	m1	m2	m3	m4

Range of Definition:

nL=04H, nH=00H

$0 \leq (m4 \times 256 \times 256 \times 256 + m3 \times 256 \times 256 + m2 \times 256 + m1) \times$

(Absolute vertical position setting units) inch $\leq 1\text{FFFFFFFH}/1440$ inch

Function:

- The printing position in the Y direction is set to a position spaced in the positive direction from the present Y printing position in the Y direction by $(m4 \times 256 \times 256 \times 256 + m3 \times 256 \times 256 + m2 \times 256 + m1) \times$ (Absolute vertical position set unit) inches.
- If the printing position in the Y direction has been set by this command to a non-printable region, then the paper is ejected, the position management coordinate system is set to the next page, and the printing position is reset to the origin of the new position management system. If the printing position in the Y direction has been set by this command to a page other than the current page, then the position management coordinate system is shifted to the printable region upon that page, and the following position management is performed upon the new position management coordinate system.
- Setting in the negative direction is ignored.
- This command is effective only for the graphic mode.

Initial State:

-

Related Commands:

Commands related in the direction of applying an effect (Setting)

None

Commands related in the direction of receiving an effect (Setting)

None

Commands related in the direction of applying an effect (Operation)

None

Commands related in the direction of receiving an effect (Operation)

The Absolute vertical position setting units are set by the ESC (U command. The non-printable region is set by the ESC (c commands. The absolute vertical position setting units, the non-printable region, and the printing position in the Y direction are reset to their initial states by the ESC @ and ESC (G commands.

6.11 Set Relative Vertical Print Position “ESC (v nL nH m1 m2 m3 m4”

Format:

ASCII	ESC	(	v	nL	nH	m1	m2	m3	m4
Hex	1B	28	76	nL	nH	m1	m2	m3	m4
Decimal	27	40	118	nL	nH	m1	m2	m3	m4

Range of Definition:

nL=04H, nH=00H

$0 \leq (m4 \times 256 \times 256 \times 256 + m3 \times 256 \times 256 + m2 \times 256 + m1) \times (\text{Relative vertical position setting units}) \text{ inch} \leq 1\text{FFFFFFFH}/1440 \text{ inch}$

Function:

- The printing position in the Y direction is set to a position spaced in the positive direction from the present Y printing position by $(m4 \times 256 \times 256 \times 256 + m3 \times 256 \times 256 + m2 \times 256 + m1) \times (\text{relative vertical position setting units})$ inches.
- The setting in the negative direction is ignored.
- If the printing position in the Y direction has been set by this command to a non-printable region, then the position management coordinate system is set to the next page, and the printing position in the Y direction is reset to the origin upon the Y-axis of the new position management coordinate system. If the printing position in the Y direction has been set by this command to a page other than the current page, then the position management coordinate system is shifted to the printable region upon that page, and the following position management is performed upon the new position management coordinate system.
- This command is only effective in graphics mode.

Initial State: -

Related Commands:

Commands related in the direction of applying an effect (Setting)

None

Commands related in the direction of receiving an effect (Setting)

None

Commands related in the direction of applying an effect (Operation)

None

Commands related in the direction of receiving an effect (Operation)

The relative vertical position setting units are set by the ESC (U command.

The non-printable region is set by the ESC (c commands.

The relative vertical position setting units, the non-printable region, and the printing position in the Y direction are reset to their initial states by the ESC @ and ESC (G commands.

6.12 Set Absolute Horizontal Print Position “ESC (\$ nL nH m1 m2 m3 m4”

Format:

ASCII	ESC	(	\$	nL	nH	m1	m2	m3	m4
HEX	1B	28	24	nL	nH	m1	m2	m3	m4
Decimal	27	40	36	nL	nH	m1	m2	m3	m4

Range of Definition:

nL=04H, nH=00H

$0 \leq (m4 \times 256 \times 256 \times 256 + m3 \times 256 \times 256 + m2 \times 256 + m1) \times (\text{Absolute horizontal position setting units}) \text{ inch} \leq 1\text{FFFFFFFH}/1440 \text{ inch}$

Function:

- The printing position in the X direction is set to a position spaced in the positive direction from the origin on the X axis (left margin position) in the position management coordinate system by $(m4 \times 256 \times 256 \times 256 + m3 \times 256 \times 256 + m2 \times 256 + m1) \times (\text{absolute horizontal position setting unit})$ inches. The default value of absolute horizontal position set unit is 1/60 inch unit.
- If the left margin position + $(m4 \times 256 \times 256 \times 256 + m3 \times 256 \times 256 + m2 \times 256 + m1) \times (\text{absolute horizontal position set unit})$ is higher than the right margin position, this command is ignored.
- This Command is effective only at the time of the graphic mode.

[Initial State] -

Related Commands:

Commands related in the direction of applying an effect (Setting)

None

Commands related in the direction of receiving an effect (Setting)

None

Commands related in the direction of applying an effect (Operation)

None

Commands related in the direction of receiving an effect (Operation)

ESC I command changes the cardinal point of absolute position set.

If ESC Q command is higher than the right margin position, this command is ignored.

The absolute horizontal position setting units are set by the ESC (U command. The absolute horizontal position setting units are reset to their initial states by the ESC @ and ESC (G commands.

6.13 Set Relative Horizontal Print Position “ESC (/ nL nH m1 m2 m3 m4”

Format:

ASCII	ESC	(	/	nL	nH	m1	m2	m3	m4
HEX	1B	28	2F	nL	nH	m1	m2	m3	m4
Decimal	27	40	47	nL	nH	m1	m2	m3	m4

Range of Definition:

nL=04H, nH=00H

$0 \leq (m4 \times 256 \times 256 \times 256 + m3 \times 256 \times 256 + m2 \times 256 + m1) \times (\text{relative horizontal print position set unit}) \text{ inch} \leq 1\text{FFFFFFFH}/1440 \text{ inch}$, or

If bit 7 of m4 is 1, this means that a negative value has been set.

Function:

- The printing position in the X direction is set to a position spaced in the positive direction from current X direction printing position by $(m4 \times 256 \times 256 \times 256 + m3 \times 256 \times 256 + m2 \times 256 + m1) \times (\text{relative horizontal position set unit})$ inches. The default value of absolute horizontal position set unit is 1/60 inch unit.
- If bit 7 of m4 is 1, this means that a negative value is being designated. The negative value is expressed with 2's complement.
- If the printing position is set by this command to a non-printable region, it is ignored. However, the printing position can be shifted on the right margin position.
- This command is effective only for the graphic mode.

Initial State:

-

Related Commands:

Commands related in the direction of applying an effect (Setting)

None

Commands related in the direction of receiving an effect (Setting)

None

Commands related in the direction of applying an effect (Operation)

None

Commands related in the direction of receiving an effect (Operation)

None

6.14 Select Raster Graphics Data “ESC i r c b nL nH mL mH d1...dk “

Format:

ASCII	ESC	i	r	c	b	nL	nH	mL	mH	d1..dk
HEX	1B	69	r	c	b	nL	nH	mL	mH	d1..dk
Decimal	27	105	r	c	b	nL	nH	mL	mH	d1..dk

Range of Definition:

r = 00H, 01H, 02H, 04H, 11H, 12H

c = 00H, 01H

b = 01H, 02H

0 <= (nHx256 + nL) <= 7FFFH

0 <= (mHx256 + mL) <= 7FFFH

Function:

- Select a color for the raster according to the “r” value.
 - r=00H : Black
 - r=01H : Magenta
 - r=02H : Cyan
 - r=04H : Yellow
 - r=11H : Light Magenta
 - r=12H : Light Cyan
- Select the raster printing mode according to following parameters;
 - c=00H : Full graphic mode (non-compression mode)
 - c=01H : Run-length encoding compression mode
- If r is out of above values, the color selected before input of this command is set.
- If c is outside of the above values, the printing mode will be set before input of this command.
- The number of bit per pixel is set according to b value.
- The support value of b is 01H (Stylus Pro 7000).
- If b is out of supporting range, this command is terminated when b is processed.
- Actual image pattern of raster format set by following parameters is created.
 - nLnH : The number of horizontal direction bytes nHx256+nL(bytes)
 - nH = INT(((the number of horizontal direction dots) x (the number of bits per pixel) +7) /8) /256)
 - nL = MOD(((the number of horizontal direction dots) x (the number bits per pixel) +7) /8) /256)
 - mLmH : The number of vertical direction dots mHx256+mL(dots)
 - k : The number of data = (mHx256+mL)x(nHx256+nL)
 - d : Data
- The printing position in the X direction is set to a position spaced in the positive direction from current X direction printing position by (nHx256+nL) x (horizontal direction resolution) inches.

If the printing position is set by this command to a non-printable region (right margin), the printing position in the X direction is reset to the right margin position

- The printing position in the Y direction is not changed by this command.
- If the image data is set to a non-printable region, the data is ignored.
- This command is effective only for the graphic mode.

Initial State: -

Related Commands:

Commands related in the direction of applying an effect (Setting)

None

Commands related in the direction of receiving an effect (Setting)

The resolution is selected by ESC (D command).

It is reset to the initial states by the ESC @ command.

Command related in the direction of applying an effect (Operation)

None

Commands related in the direction of receiving an effect (Operation)

None

6.15 New Page (Form Feed) “FF”

Format:

ASCII	FF
Hex	0C
Decimal	12

Parameters Range: -

Function:

- The contents of the print buffer are printed, the position management coordinate system is set to the next page, and the printing position is set to the origin on this new position management coordinate system.
- The paper is output.
- With single sheet paper, this command is ignored if no paper is input.

Initial State: -

Related Commands:

Commands related in the direction of applying an affect (Setting)

None

Commands related in the direction of receiving an affect (Setting)

None

Commands related in the direction of applying an affect (Operation)

None

Commands related in the direction of receiving an effect (Operation)

The page length is set by the ESC (c command.

The page length and the left margin position are reset to their initial states by the ESC @ and ESC (G commands.

6.16 Enter Remote Mode Command “ESC (R”

Format:

ASCII	ESC	(	R	08H	00H	00H	REMOTE1
Hex	1B	28	52	08	00	00	52 45 4D 4F 54 45 31
Dec	27	40	82	08	00	00	82 69 77 79 84 69 49

Function:

- This command is used to enter Remote Mode from ESC/P or ESC/P 2 mode.
- Exits current printer controls language and enters Remote Mode. This mode is maintained until the Exit Remote Mode command “ESC 00 00 00” is accepted by the printer.

Note:

- This command is only valid in text mode.
- If the printer buffer contains data prior to entering Remote mode, the data will be printed prior to entering Remote Mode.
- Once in Remote Mode, the printer does not accept ESC/P 2 commands.

6.17 Select Mechanism Sequence “SN”

The printer driver can control the head gap by this SN command.

Format:

ASCII	S	N	03H	00H	00H	m1	m2
Hex	53	4E	03	00	00	m1	m2
Dec	83	78	03	00	00	m1	m2

Parameters:

The following m1 and m2 parameters are each one byte binary values that indicates mechanism sequences.

m1	m2	Description	Comment
00H	--	Feed paper sequence setting	Not used for Stylus Pro 7000
01H	00H	Default PG Setting	Platen gap setting
	01H		PG High
00H	02H-FHH		Reserved
02H-FFH		Reserved	

Function:

- The default environment mechanism sequence is set
- If parameter m1, m2 are out of range (02H=FFH), this command is ignored and the current setting is maintained.
- While in the EPSON Remote Mode, ESC/P2 commands are not recognized by the printer until “ESC 00H 00H 00H” is invoked to exit this Mode.
- Remote Mode commands should be sent prior to sending ESC/P2 commands.
- *This command is only valid in Remote Mode.*

6.18 Set Paper Path "PP" 03H 00H 00H m1 m2

Format:

"PP" 03H 00H 00H m1 m2

Parameters:

The parameter m1 is one byte binary value, and indicates the paper path:

Paper	m1
Manual feed	02H
Roll paper	03H
Reserved	04H - FFH

The parameter m2 is one byte binary parameter, and indicates the paper path Number. This has no meaning with Stylus Pro 7000

Function

- The paper path default environment is set.
- If the selected paper path by the panel is different from the paper path specified by this command, due to mismatch paper an error message appears with Stylus Pro 7000.
- If parameter m1 is out of range (00H, 01H, 04H-FFH), this command is ignored and the current setting is maintained.
- *This command is only valid in remote mode.*

6.19 Set Auto Cutting State “AC” 02H 00H 00H m1

Format: “AC” 02H 00H 00H m1

Parameters:

Parameter m1 is a one byte binary value, and indicates the state as follows:

Set Auto Cutting	m1
Auto Cutting Off	00H
Auto Cutting On	01H
Horizontal print page line On	02H
Blank skip eject mode reset	40H
Blank skip eject mode set	41H
Reserved	03H - FFH

Function:

- The default environment roll paper auto cutting state is set.
- If the auto cutting is on, the roll paper is cut automatically at TOF position just after FF command is executed.
- If the horizontal dot printing is on, it prints horizontal lines at a height of 1 dot at TOF position just after FF command is executed. (for manual cutting)
- If the sheet is set, or if it is not stopped at TOF position just after FF command is executed, it doesn't cut paper / print horizontal line even if it's On.
- If parameter m1 is out of range, this command is ignored and the existing setting is maintained.
- *This command is only valid in remote mode.*

Exception:

- When the banner mode is set, it executes the LD Command, then the FF Command is processed.

6.20 Set Drying Time “DR” 04H 00H 00H m1 m2 m3

Format:

“DR” 04H 00H 00H m1 m2 m3

Parameters:

The m1, m2 and m3 are each one byte binary parameters. Parameter m1 indicates the state as follows:

Drying Position	m1
Per scan	00H
Per page	01H
Reserved	02H - FFH

The drying time by the following expression is set by the parameters m2 and m3. If m1=00H(drying per scan), the unit of time is m second. If m1=01H(drying per page), the unit of time is seconds.

$$(\text{Drying Time}) = ((m3 \times 256) + m2)$$

m1=00H: $0 \leq (\text{Drying Time}) \leq 10000$ m seconds

m1=01H: $0 \leq (\text{Drying Time}) \leq 3600$ seconds

Function:

- The default environment drying time is set.
- Stop on the position unit set by m1 for the time set by m2 and m3.
- If it is per page, it is waiting for setting time after received FF command. (If the FF command is not received, it doesn't stop.)
- If parameter m1, m2, and m3 are out of range, this command is ignored and the existing setting is maintained.
- *This command is only valid in remote mode.*

Exception:

- If the banner mode is set, it processes after the LD command is executed and not after the FF command.

6.21 Select Ink Type “IK” 02H 00H 00H m1

Format:

“IK” 02H 00H 00H m1

Parameters:

Parameter m1 is one byte binary parameter, and indicates the ink type as follows:

Ink Type	m1
Dye ink	00H
Pigment ink	(N/A)
Reserved	02H - FFH

Function:

- The default environment ink type is set.
- If parameter m1 is out of range, this command is ignored and the existing setting is maintained.
- *This command is only valid in remote mode.*

6.22 Set Pause After Printing “PZ” 02H 00H 00H m1

Format:

“PZ” 02H 00H 00H m1

Parameters:

Parameter m1 is one byte binary code, and indicates the state as follows:

Set Pause After Printing	m1
Off	00H
On	01H
Reserved	02H - FFH

Function:

- The default pause state after printing is set.
- If the pause after printing is ON, the printer is stopped at the pause state after the FF command is executed.
- If the auto cutting is set, it is pausing after cutting / printing horizontal lines.
- If parameter m1 is out of range, this command is ignored and the existing setting is maintained.
- *This command is only valid in remote mode.*

Exception:

- If the banner mode is set, it processes after the LD command is executed and not after the FF command.

6.23 Set Vertical Print Page Line Mode “EX” 06H 00H 00H 00H 00H 00H 14H m1

Format:

“EX” 06H 00H 00H 00H 00H 00H 14H m1

Parameters:

Parameter m1 is one byte binary code, and indicates the state as follows:

Set Vertical Print Page Line Mode	m1
Off	00H
On	01H
Reserved	02H - FFH

Function:

- The default environment vertical print page line mode is set.
- If the paper width is set previously, and the actual paper width is longer than setting, it prints vertical lines at a width of 1 dot on the horizontal position within setting paper width from the top margin position to the bottom position.
- If the paper width is not set yet, it doesn't print.
- If parameter m1 is out of range, this command is ignored and the existing setting is maintained.
- *This command is only valid in remote mode.*

6.24 Select Paper Thickness “PH” 02H 00H 00H m1

Format:

“PH” 02H 00H 00H m1

Parameters:

Parameter m1 is one byte binary code, and indicates the state as follows:

Select Paper Thickness	m1
Thickness 0.0 mm	00H
Thickness 0.1 mm	01H
Thickness 0.2 mm	02H
Thickness 0.3 mm	03H
Thickness 0.4 mm	04H
Thickness 0.5 mm	05H
Thickness 0.6 mm	06H
Thickness 0.7 mm	07H
Thickness 0.8 mm	08H
Thickness 0.9 mm	09H
Thickness 1.0 mm	0AH
Thickness 1.1 mm	0BH
Thickness 1.2 mm	0CH
Thickness 1.3 mm	0DH
Thickness 1.4 mm	0EH
Thickness 1.5 mm	0FH
Thickness 1.6 mm	10H
Reserved	11H - FFH

Function:

- The default environment paper thickness is set.
- If parameter m1 is out of range, this command is ignored and the existing setting is maintained.
- *This command is only valid in remote mode.*

Note:

The setting of platen gap isn't changed, even if the thickness is set less than 0.5mm by this command.

However, if the thickness is set more than 0.6mm, the platen gap high is set forcibly.

6.25 Terminate Remote Mode “ ESC 00H 00H 00H ”

Format:

ESC 00H 00H 00H

Function:

- The following procedures are executed:
- The default environment is copied to the current environment.
- If interface related items have been changed, the interface related state and settings are changed.
- Software initialization is executed (If in ESC/P mode, initialization by ESC @. In other printer languages, initialization corresponding to ESC @.)
- The remote mode is terminated, and the mode is changed to the selected printer language.
- *This command is only valid in remote mode.*

6.26 Load Default Value “LD 00H 00H”

Format:

LD 00H 00H

Function:

- The following procedures are executed:
- The power on default environment memorized in NVRAM is loaded to default environment.
- NVRAM indicates EEPROM, DIP-SW, and ROM. The power on default environment is read from the appointed NVRAM with each setting item, and the default environment is loaded.
- However, settings by following commands are not changed by this command. (not loading)
- SM command (set the status transmitting mode)
- Baud rate setting value for the MAC serial by the BR command (set baud rate) is not initialized. (The built-in EIA-232D serial interface intended to be initialized.)
- *This command is only valid in remote mode.*

6.27 Paper Size Specification

The region on the paper is separated for 2 regions, the printable region and the non-printable region.

These regions are defined as following;

The printable region is the region that can be set for the printing position, and the region surrounded by the left margin position setting, the right margin position setting, the top margin position setting, and the bottom margin position setting.

The non-printable region is the region that cannot be set for the printing position except for the right margin position, and the region out of the printable region on the paper.

Each margins for the printable region is defined as following;

The left margin is the non-printable region width added on the left side of the printable region.

The left margin position indicating the border of the margin is set on the X- axis. The left margin position is included in the printable region.

The right margin is the non-printable region width added on the right side of the printable region.

The right margin position indicating the border of the margin is set on the X-axis. The right margin position is included in the non-printable region.

However, the printing position on the right margin position can be set.

The top margin is the non-printable region height added on the top of the printable region.

The top margin position indicating the border of the margin is set on the Y-axis.

The top margin position is included in the printable region.

The bottom margin is the non- printable region height added under the bottom of the printable region.

The bottom margin position indicating the border of the margin is set on the Y-axis.

The bottom margin position is included in the non-printable region.

The page management coordinate system is the standard to set each margin positions is same as the position management coordinate system except definition of the origin.

The coordinate system to manage printable region set in the page management coordinate system is the position management coordinate system. The page management coordinate system is set per page.

The origin of the page management coordinate system is defined as following;

The origin on the X-axis is set on the smallest printing position. The smallest printing position is the printing position at the left end that can be set on the paper physically.

The smallest printing position depends on the horizontal position of paper at the time of input.

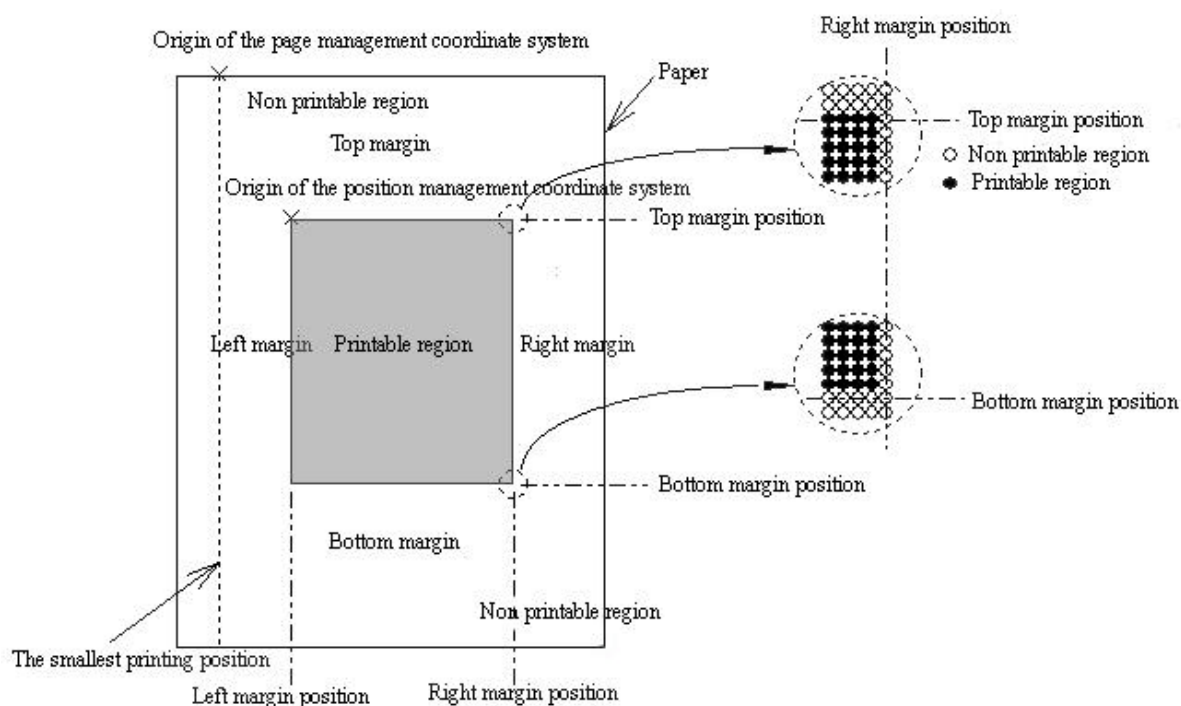
The origin of the Y-axis is the top end of the paper for the page 1 just after feeding paper. The origin of the Y-axis after the page two is the position added page length to the origin of the page management coordinate system in the last page. In the case of cutting sheet, the top of the paper is the origin all the time, because only 1 page can be set.

The page and the page length are defined as following;

The page is the Y direction unit region including one printable region in it. If it's the cutting sheet, only one page can be set on the paper. If it's the roll paper, plural pages can be set on the paper.

The page length is the Y direction length on the page. If it's the cutting sheet, the page length is the Y direction printing region length from the top margin position almost to the bottom margin position. If it's the roll paper, the page length is the length from the top margin position on the current page to the top margin position on the next page.

The printing region of cutting sheet



CHAPTER 7: SUPPLEMENT

7.1 Set Panel and Remote Command

This printer has a display operation panel, and each setting can be set by the panel or by the remote commands. The following are the setting by the panel and by the remote commands:

- The setting by the panel is saved as the default value of the printer.
- The setting value of remote commands is used for items to set by the driver with remote commands.
- The default value of the printer is used for items not to set by the driver.
- The default value of the printer is loaded by LD commands (remote commands), and the setting by remote commands is cleared.
- The driver sets the LD command and returns to the default value of the printer after finishing job to clear the setting by the remote mode.

7.2 Select Paper Thickness

The driver sets the paper thickness to the printer by the paper thickness setting command. The printer enhances the print quality using this thickness as data to calculate the gap of the head - paper surface with each mode.

See *Chapter 2*

7.3 Auto cut ON/OFF

This function automatically cuts the roll paper with a cutter after the new page.

- If the sheet is selected, the selection of the auto cut is invalid.
- The printer operation by the setting of the auto cut depends on the combination of the print page line function.
- The default setting of the auto cut is ON.

Table 12. Auto Cut/off mode

Auto Cut	Page Line	Printer Operation
Command	Command (Vertical Line)	
00H	00H	Nothing
00H	01H	Print vertical lines
01H	00H	Auto Cut
01H	01H	Print vertical lines and auto cut
02H	00H	Print horizontal line
02H	01H	Print Page Line (vertical line, horizontal line)

7.4 Print Page Line

The function to print page line of paper size position on the right side and at the bottom of the paper.

- If the sheet is selected, the selection of the print page line is invalid.
- The operation depends on the combination of auto cut On/Off. (See last paragraph)
- The default setting of the print page line is Off.
- The function is available only for printer MicroWeave Mode.

7.5 Paper Saving Function

When paper saving function is selected, the printer follows auto cut setting command (cuts automatically, prints horizontal lines, and waits) after feeding paper for the bottom margin at the position received FF (new page) command. As a result, it can save paper if the image data has space at the end.

When paper saving function is not selected and the printer receives FF command, it follows auto cut setting command after feeding paper to the position defined with paper size setting command.

Refer to “AC” command.

7.6 Print Cancel Sequence By Users

When users cancel during printing with the driver, the driver cancels printing to avoid wasting paper with print cancel sequence.

When the printer receives a print cancel sequence, it follows auto cut setting command (cuts automatically, prints horizontal lines, and waits) without paper feeding.

Stylus Pro 9000 does not follow this command. However, it works with the same sequence although it leaves print data a few mm of the roll paper.

Stylus Pro 9000 can avoid leaving print data with print cancel command after transmitting a few mm set vertical position (ESC (V, ESC (v) command.

Refer to command sequence flow.